

## **EXERCISE DEVICE FOR UNDER A DESK**

### **Description**

#### **Background of the Invention**

#### **Field of the Invention**

5       The present invention generally relates to office exercise devices that can be used by a user while seated at a desk, and in particular, to a hand and foot lever-arm rowing type exercise device that is mounted in the foot space under a desk.

#### **Description of the Prior Art**

Many people appreciate the need to exercise regularly. Unfortunately, busy  
10   business schedules often make it difficult to incorporate a regular exercise schedule into a working week. An exercise device that can be used while a person is working would provide the benefit of exercise that can be achieved during working hours.

U.S. Patent #5,807,211, issued 9/15/1998 to Berryhill, shows an exercise device that is particularly adapted for use by individuals while seated in a stationary chair. The  
15   inventive exercise device employs a folding frame, which has attached bicycle type pedals, a leg press bar, and resistance pulls. The bicycle type pedals are attached to one side of the folding frame, the leg press bar hangs from a horizontal bar on the opposite side of the folding frame, and the resistance pulls are also attached to the other side of the folding frame, opposite the bicycle type pedals. By positioning the front of the exercise  
20   device in front of an individual seated in a chair, pedaling exercises can be accomplished. By positioning the rear of the exercise device in front of a seated individual.

U.S. Patent Application #20020137606, published 9/26/2002 by Willis, puts forth a portable leg or arm powered exercise device for a person that may include a seating pad

permanently or detachably affixed to a support base upon which one or more resistance members are mounted for engagement by one or both feet or hands of the user. Preferably the resistance members include coil springs to provide the resistance and spring control guides to prevent overly sharp angular bending of the coil springs. The exercise device  
5 can be used while seated with the device placed under a desk or table having limited vertical dimensions.

U.S. Patent Application #20020142898, published 10/3/2002 by Willis, concerns an office chair and office desk independently incorporating certain activity features. The chair and desk arrangements allow the user to perform beneficial exercise without leaving  
10 the chair or desk by utilizing movable exercise arms attached to adjustable variable resistance bearing assemblies attached to the chair seat or the desk to provide a full range of omni-directional exercises.

U.S. Patent #5,807,212, issued 9/15/1998 to Nelson, concerns a leg exerciser that includes a leg exercise device sized to fit beneath the desk of a user, and an anchoring  
15 device attached to the exercise device. The anchoring device is adapted to be affixed to the user's chair. This allows the user to sit at his or her desk in the chair and actuate the leg exerciser while doing so.

U.S. Patent #6,261,212, issued 7/17/2001 to Vallone, provides an adjustable resistance rehabilitation exercise device for use by individuals without supervision to  
20 follow prescribed or desired iterative cycles of therapeutic exercise regimens. The adjustable resistance rehabilitation exercise device preferably includes a pilot pulley assembly and a adjustable resistance control spooler assembly, mounted and secured to

individual 'O' clamp and/or channeled 'U' clamp assemblies, interconnected by a flexible cord, with bayonet clips secured at both ends of the cord, and supplemented with hand grips, precision straight scale, multi-purpose harness assembly and anchoring device. The 'O' clamp and channeled 'U' clamp screw assemblies may be disassembled and employed in either of two 'O' clamp screw holes and also are interchangeable between the 'O' and Channeled 'U' clamps. The pilot pulley assembly is configured with a single grooved roller and performs the primary function of establishing and maintaining a tangential path for the flexible cord travel from the adjustable resistance control spooler assembly to the pilot pulley roller to minimize friction and resultant added exercise forces. The adjustable resistance rehabilitation exercise device accessories include hand grip(s) and a precision, spring style, straight scale for calibrating and verifying prescribed and preset exercise forces for individual therapeutic regimens. The channeled 'U' clamp is more ideally suited for attachment to flat board surfaces such as found in physical therapy plinths, tables, desks and exercise/work bench configurations.

U.S. Patent #4,482,149, issued 11/13/1984 to Weldon, discloses an arm exercise device that has an exercising arm adjustable to different lengths to accommodate forearms of different lengths and attached to a bearing-supported lateral rod which has an upright portion at the other end. Springs or other tension devices are attached at one end to the lateral rod and, at the other end, to a tension bar that is adjustable with respect to the base. In one variation, the tension arm can be re-positioned 180 degrees from its initial position, thereby permitting use of the device for exercising right or left arms. In a further refinement, safety stops are provided which limit the movement of the exercising

arm, thereby preventing it from passing the upright position. The base of the exercise machine is held in place on a table or desk by table clamp braces.

U.S. Patent #5,160,303, issued 11/3/1992 to Smith, indicates a compact and easily adjusted exercising device useful for exercising the upper arms, shoulders, calves or the  
5 like. The device has a base that may be supported on a desk, table or floor. A pair of uprights support an upper bar over which one or more rubber bands are placed. This bar is removable when it is desired to change the rubber bands. A hollow lower bar is held between the uprights and the one or more rubber bands pass over this bar. A handle-supporting bar is then slid through vertical slots in the uprights and through the center of  
10 the lower supporting bar. This provides a light, easily adjusted exercising device that can be easily used by the busy executive or even by bedridden persons.

U.S. Patent #5,044,633, issued 9/3/1991 to Rice, provides chair that functions well as an ordinary office chair and which can be used to perform exercises. The chair includes all the attributes of a comfortable office chair, including a padded seat with a  
15 seat bottom and seat back, and a pedestal with casters that rollably support the seat on a chair pad lying behind an office desk. The seat back has an upper part with extendable handles that can be grasped to raise and lower it while a mechanism resists vertical movement to provide exercise. The seat has armrests that each have a moveable portion with extendable handles and a resistance mechanism to provide exercise in raising and  
20 lowering the armrests. The chair also has an extendable mechanism mounted under the seat bottom and having a pair of foot handles that allow the seated person to move the handles forward and back for further exercise. All exercise mechanisms of the chair can

be deployed, used, and stowed while the person remains seated, so the person is encouraged to conduct exercises during brief appropriate periods such as when the person is talking on a speakerphone.

U.S. Patent #3,738,649, issued 6/12/1973 to Miller, discloses an exercising arrangement that includes a chair with a space beneath the seat portion. The exercise devices are mounted on a platform beneath the seat and concealed by front and side panels. A track comprises the mount for the platform, permitting it to be extended in front of the seat portion where the exercise apparatus is accessible for manipulation by a person sitting in the chair.

U.S. Patent #5,833,575, issued 11/10/1998 to Holslag, illustrates a portable exercise apparatus that includes a support frame, which has a base mountable under a chair to hold the base in a stationary position with a user seated on the chair and an upright standard mounted upon the base. The apparatus also comprises a shaft mounted to an upper end of the upright standard and that has opposite ends extending from opposite sides thereof. The apparatus further comprises a pair of arms disposed on opposite sides of the upright standard with each arm at one end mounted to one end of the shaft for rotatably mounting the arm to the upright standard. The apparatus includes a pair of pedals each mounted to the other end of each of the arms for engagement by a user to create the force necessary to rotate the arms relative to the upright standard. The apparatus also includes a resistance generating and adjusting mechanism disposed on the ends of the shaft at the opposite sides of the upright standard and engaged with the one ends of the arms and being operable to generate and selectively adjust a level of

resistance to rotation of the pair of arms relative to the upright standard in response to rotation of the arms. The resistance generating and adjusting mechanism includes at least one conical-shaped spring washer received over one of the shaft ends and being respectively compressible and expandable for correspondingly increasing and decreasing the level of resistance to rotation of the arms by the user. The support frame is attachable to a desk chair or the like.

U.S. Patent #5,314,392, issued 5/24/1994 to Hawkins, illustrates a pedal exerciser for performing stepper exercises. The device includes a pair of pedal cranks, each crank driving one of a pair of crankshafts that are coupled together by bevel gears such that, when one pedal is forced to rotate downward, the other pedal rises thereby providing reciprocating stair climbing motion. Adjustable resistance to stepping is provided by a resistance pad against either the idler bevel gear or one or both crankshafts. The compact construction is amenable to positioning the exerciser under a desk or table for a seated user. A detachable frame with handles may be attached for an erect user.

U.S. Patent #3,751,033, issued 8/7/1973 to Rosenthal, indicates a combination of a chair and an advanceable and retractable pedaling device. The pedaling device is pivotally secured to the bottom of a chair by a telescoping member. The telescoping member with the pedaling device may be adjusted to a desired angle for comfortable pedaling. The length of the telescoping member may be adjusted to suit the length of the user's legs. An adjustable counter-force device is provided to vary the force desired applied by the user. The device may be locked in place out of the way, under the chair.



While there have been a number of portable exercise devices and exercise devices attachable to furniture, none provide a lever-arm rowing type exerciser attached under a desk. The present invention addresses the inadequacies of the prior art by providing a simplified exercise device for use while seated in a chair. The exercise device of the present invention is small, lightweight and easily secured to any desk or cubicle. In addition, due to its relatively small size and lightweight the exercise device of present invention is easily stored.

#### **Summary of the Invention**

An object of the present invention is to provide a simplified lever-arm rowing type exercise device that is easily mounted under a desk for use while seated in a chair.

Another object of the present invention is to provide a lever-arm rowing type exercise device that is small, lightweight and easily secured to any desk in the foot space.

One more object of the present invention is to provide an exercise device for use with a desk or cubicle that is easily stored when not in use by holding the lever arms flat against the upper portion of the leg space with friction clamps.

A succeeding object of the present invention is to provide a hand grip that has a turning means for wrist twisting exercises and a squeeze handle for performing hand gripping exercises.

Once again another object of the present invention is to provide a foot attaching portion for moving the second lever arm for leg exercises, which further comprises a pair of foot pedals for bicycling exercises.

In brief, a lever-arm rowing type exercise device that is mountable in a leg space under a desk, which comprises pivotally attached lever arms for exercising both arms and legs. The lever arms are removably mountable to the desk surface by suction cups or other attachment means that have pivot rods for pivotally mounting the lever arms thereon. The lever arms are telescopically adjustable in length and have a spring or tensioned rubberized cords or an air cylinder or other pneumatic system connected between the lever arm and the desk, which provide resistance while exercising. When not in use the lever arms are easily stored and held flat against the desk by friction clamps.

The first set of lever arms, which are to be used for arm and upper body workout, include a hand grip that enables movement of the lever arm by a user. The hand grip also has a means for turning, as indicated by the arched two-headed arrow, relative to the lever arm for wrist twisting exercises. The hand grip further comprises a squeeze handle that is pivotally mounted to the hand grip with a tension means, such as a spring hinge, therebetween for performing hand gripping exercises.

The second lever arm, which is used for leg and lower body workout, includes a foot attaching portion with foot receiving loops for receiving at least one foot of a user for the purpose of moving the second lever arm for leg exercises. The foot attaching portion further comprises a pair of foot pedals, which are attached to the side of the foot attaching portion by a rotatable means having a tension means, such as a torsion knob, for alternately exercising the legs of the user in a bicycle pedaling motion.

An advantage of the present invention is that it may be used while seated at a desk.



Another advantage of the present invention is that it provides a variety of exercises for both arms and legs.

An additional advantage of the present invention is that it may be held in place, out of the way when not in use.

5 One more advantage of the present invention is that it is easily secured to any desk.

Yet another advantage of the present invention is that it is small and lightweight.

Still another advantage of the present invention is that it provides a way to fit exercise into a busy schedule or a sedentary lifestyle.

#### 10 **Brief Description of the Drawings**

These and other details of my invention will be described in connection with the accompanying drawings, which are furnished only by way of illustration and not in limitation of the invention, and in which drawings:

FIG. 1 is a front perspective view of the hand and foot lever-arm rowing type exercise device of the present invention mounted in the leg space under a desk;

FIG. 2 is a side elevational partial broken view showing a seated exerciser using the device of FIG. 1.

#### **Best Mode for Carrying Out the Invention**

In FIGS. 1 and 2, a lever-arm rowing type exercise device 20 that is mountable in a leg space 41 under a desk 40, which comprises preferably two adjustable lever arms 21A, attached to a desk surface 42 within the leg space 41 of the desk 40 by a pivotable

means, such as a pivot rod hinge 23, at the first end of each of the lever arms 21A with one lever arm 21A on each side.

The device 20 also comprises a tension means, such as a spring means 22 or rubberized cord or an air pressure means 22A, such as an air cylinder or other pneumatic device, which is attached between the lever arm 21A and the desk surface 42 to create a resistance to moving the lever arm 21A for the purpose of exercising by moving the lever arm 21A.

The device 20 further comprises a hand grip 18 that is attached to the second end of the lever arm 21A. The hand grip 18 enables movement of the lever arm 21A by a user. The hand grip 18 has a means for turning, as indicated by the arched two-headed arrow shown in FIG. 1, relative to the lever arm 21A for wrist twisting exercises. The hand grip 18 also comprises a squeeze handle 19, which is pivotally mounted to the hand grip 18 with a tension means, such as a spring hinge 15, therebetween for performing hand gripping exercises, as shown in FIG. 2.

The device 20 also comprises a second lever arm 21F, preferably an adjustable single arm 21F centrally attached to the desk surface 42 within the foot space 41 of the desk 40 by a pivotable means 23 at the first end of the second lever arm 21F. A tension means that comprises a spring means 22 or rubberized cord or an air pressure means 22A, such as an air cylinder or other pneumatic means is attached between the second lever arm 21F and the desk surface 42 to create a resistance to moving the second lever arm 21F for the purpose of exercising by moving the second lever arm 21F. A foot attaching portion 27, which comprises a flat surface 27 mounted on the second lever arm 21F,

attached to the second end of the second lever arm 21F by a hinged bracket 16. The foot  
attaching portion 27 receives the feet of a user for the purpose of moving the second lever  
arm 21F for leg exercises, as shown in FIG. 2. The foot attaching portion 27, which  
receives feet of the user has a pair of foot receiving loops 26 attached to the flat surface  
5 27. The foot attaching portion 27 further comprises a pair of foot pedals 28 that attach to  
the side of the foot attaching portion 27 by a rotatable means that has a tension means,  
such as a torsion knob 29, for exercising the legs of the user in a bicycle pedaling  
movement.

The lever arms 21A and 21F are adjustable in length by a telescoping means and  
10 are connected together at the attachment means 23 and 24 by two telescoping adjustable  
rods 17. The lever arms 21A and 21F are removably mountable to the desk surface 42 by  
suction cups 24 or other mounting means that have a pivot rod connecting means 23 for  
pivotally mounting the lever arms 21A and 21F thereon, as shown in FIG. 1.

In practice, the lever-arm rowing type exercise device 20 would be mounted to the  
15 upper surface 42 of a leg space 41 under a desk 40 by adhering the suction cups 24 for  
the lever arms 21A and 21F and the tension means 22 or 22A to the desk surface 42.  
Prior to use the user would need to adjust the telescoping portions of the lever arms 21A  
and 21F to the desired length.

To exercise the wrists the user would twist the hand grip 18, as indicated by the  
20 arched two-headed arrow, as shown in FIG. 1, relative to the lever arm 21A.

To perform hand gripping exercises, the user would alternately grip and release the squeeze handle 19, which is pivotally mounted to the hand grip 18 with a tension means, such as a spring hinge 15 therebetween, as shown in FIG. 2.

To perform arm exercises the user would grasp the hand grips 18 and push or pull  
5 the lever arm 21A against the resistant force of the spring 22 or rubberized cord or the air pressure means 22A, such as an air cylinder or other pneumatic means, thereby strengthening the arms, as shown in FIG. 2.

To perform leg exercises the user would insert their feet into the foot receiving loops 26 attached to the flat surface 27 and push or pull the second lever arm 21F against  
10 the resistant force of the tension means 22 or 22A, thereby strengthening the legs, as shown in FIG. 2. The user could also exercise their legs by placing their feet on the pedals 28, which are attached to the sides of the flat surface 27, and moving the pedals 28 in a bicycling motion.

When not in use the lever arms 21A and 21F may be easily stored with the lever  
15 arms 21A and 21F held flat against the desk surface 42 by friction clamps 25.

It is understood that the preceding description is given merely by way of illustration and not in limitation of the invention and that various modifications may be made thereto without departing from the spirit of the invention as claimed.